

**ABSTRACT**

An apparatus and method for regulating multiple input voltages for a microelectronics device. The apparatus includes a controller configured to maintain each of the multiple input voltages supplied to one or more microelectronics devices within a range. The controller may be  
5 further configured to maintain input voltage according to a lower limit providing a wider regulation window for the power supply to operate without sacrificing performance for the microelectronics device or degrading its reliability. In one embodiment, the controller is configured to statically or dynamically adjust a gain factor for of a feedback loop in order to maintain the device input voltage according to a regulating loadline.

10